

**ANGLE RATE INTERFEROMETER AND PASSIVE RANGER****ABSTRACT OF THE INVENTION**

A receiver includes a processor and an RF bridge coupled to the processor. The RF bridge includes first and second frequency converters coupled to respective first and second antennas, a third frequency converter coupled to outputs of the first and second frequency converters, a frequency source coupled to the first frequency converter, and a fourth frequency converter coupled to a reference signal from the processor and coupled between the frequency source and the second frequency converter. The RF bridge further includes a filter coupled between the fourth frequency converter and the second frequency converter. The filter provides a stop band at a highest frequency of a signal from the frequency source and a pass band at a shifted frequency that is a sum of a frequency of the reference signal and a lowest frequency from the frequency source. The processor includes a digital frequency source to generate a reference signal, and circuitry to detect a frequency difference from an information signal received from the RF bridge. The circuitry to detect includes first and second Fourier transformers having respective first and second center frequencies, a frequency converter coupled between the information signal and inputs to the first and second Fourier transformers, a frequency discriminator coupled to outputs of the first and second Fourier transformers, and a digital frequency generator that generates first and second digital signals at the respective first and second center frequencies. The digital frequency generator further generates a third digital signal coupled to the frequency converter. The third digital signal is generated at a frequency to cause the frequency converter to shift a frequency of the information signal to a frequency between the first and second center frequencies.

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